

**Readorium Alignment with FOSS Kit-Matter and Energy**

Readorium Books By Standard	Magazine Articles (A) and Science Alive Videos (V) By Standard	Teacher Resource Center Classroom Strategy Lessons (CL) with Articles (A) by Standard
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**NGSS: 3-PS2.A. Motion and Stability: Forces and Interactions: Forces and Motion:** Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object’s speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces is used at this level.) (3-PS2-1)

The patterns of an object’s motion in various situations can be observed and measure; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at the level, but the concept that some quantities need both size and direction to be described as developed.) (3-PS2-2)

<ul style="list-style-type: none"> <li>• Amusement Park Physics</li> <li>• Changing Face of Earth, The</li> <li>• Deep Space</li> <li>• Olympic Champs: It's Not Just Luck – It's Physics!</li> <li>• Unbalanced Forces</li> </ul>	<ul style="list-style-type: none"> <li>• A Magnet Experiment (A)</li> <li>• A River of Ice (A)</li> <li>• Adventures of Messy Magnet (A)</li> <li>• Magnificent Magnets (A)</li> <li>• Making Hovercrafts (A)</li> <li>• Simple Machines: Fun Facts and Riddles (A)</li> </ul>	
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**NGSS: 3-PS2.B Motion and Stability: Types of Interactions:** Objects in contact exert forces on each other. (3-PS2-1)

Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. (3-PS2-3), (3-PS2-4)

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**NGSS: 3-ETS1.A. Engineering Design: Defining and Delimiting an Engineering Problem:** Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5-ETS1-1) (secondary to 4-PS3-4)

<ul style="list-style-type: none"> <li>• Computer Revolution</li> <li>• Deep Space</li> <li>• Earth’s Systems</li> <li>• Exploring the Ocean's Depths</li> <li>• Improving Lives with Assistive Technology</li> <li>• Living in Space</li> <li>• Making Movie Magic</li> </ul>	<ul style="list-style-type: none"> <li>• The Science of Jelly Beans(A)</li> <li>• Amazing Teen Scientist (A)</li> <li>• The Science of Movie Stunts (A)</li> <li>• Cool Beams! (A)</li> <li>• Robotic Arms (V)</li> <li>• The SpelBots (V)</li> </ul>	<ul style="list-style-type: none"> <li>• Word Learning (CL-1, A-1 Introduction to Archeology)</li> <li>• Word Learning (CL-1, A-2 How Archeologists Work)</li> <li>• Word Learning (CL-1, A-3 The Archeology Lab)</li> </ul>
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<ul style="list-style-type: none"> <li>• Olympic Champs: It's Not Just Luck – It's Physics!</li> <li>• On the Move with Transportation Technology</li> <li>• Powering Our Lives with Energy</li> <li>• Technology Changes Medicine</li> </ul>		
<p><b>NGSS: 3-ETS1.B Engineering Design: Developing Possible Solutions:</b> Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)</p> <p>At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2)</p> <p>Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.</p>		
<ul style="list-style-type: none"> <li>• Improving Lives with Assistive Technology</li> <li>• Living in Space</li> <li>• Olympic Champs: It's Not Just Luck – It's Physics!</li> <li>• On the Move with Transportation Technology</li> <li>• Powering Our Lives with Energy</li> <li>• Science - What's it All About?</li> <li>• Solving Crime with Forensics</li> <li>• Technology Changes Medicine</li> </ul>	<ul style="list-style-type: none"> <li>• Amazing Teen Scientist (A)</li> <li>• A Computer's Best Friend (A)</li> <li>• Why Are Some Hands More "Handy" Than Others? (A)</li> <li>• Mysteries of the Common Cold (A)</li> <li>• Breathe Easier - Understanding Asthma (A)</li> <li>• All About Recycling(A)</li> <li>• Shrimp Farming: A Shocking Environment (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Graphic Features (CL-2, A-1 War Machines-Siege Engines)</li> </ul>
<p><b>NGSS: 3-ETS1.C Optimizing the Design Solution:</b> Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3-5-ETS1-3) (secondary to 4-PS4-3)</p>		
<ul style="list-style-type: none"> <li>• Science - What's It All About?</li> </ul>	<ul style="list-style-type: none"> <li>• Biotechnology (A)</li> <li>• Virtual Reality Scientists (V)</li> <li>• Cancer: Cells Out of Control</li> <li>• RoboBees (V)</li> <li>• Twin Fascination(A)</li> <li>• Robotic Arms (V)</li> <li>• The SpelBots (V)</li> </ul>	